CHAPTER 4 – HEAT

ACTIVITY- 4.2: To measure the temperature using clinical thermometer.

(Page No. 37)

Question 1- The normal temperature of our body is …….

Answer- 37ºC.

Question 2- The clinical thermometer can measure temperature above 45ºC. (T/F)

Answer- False.

ACTIVITY- 4.3: Measurement of temperature of water by using a laboratory thermometer.

(Page No.- 38, 39)

Question 1- Thermometer should be held from its bulb. (True/False)

Answer- False.

Question 2- The thermometer should not touch the …….. of the beaker.

Answer- Bottom or sides.

ACTIVITY- 4.4: Flow of heat through a metal strip.

(Page No. 39, 40)

Question 1- The handle of cooking vessels are good conductor of heat. (True/False)

Answer- False.

Question 2- The handle of electric iron is good conductor of heat. (True/False)

Answer- False.

ACTIVITY- 4.5,4-6: Transfer of heat through liquids and gases.

(Page No.- 40-42)

Question 1- The ventilators in the rooms are used to expel cold air. (True/False)

Answer- False.

Question 2- The liquids are always heated from the bottom. (True/False)

Answer- True.

ACTIVITY- 4.7: Dark colour objects absorb more heat.

(Page No. 44)

Question 1- We wear light coloured clothes in winters. (True/False)

Answer- False.

Question 2- Dark coloured clothes absorb less heat. (True/False)

Answer- False.

EXERCISE

Question 1- Fill In The Blanks.

(i). The hotness of an object is measured by its **temperature**.

(ii). The mode of heat transfer without any medium is called **radiation**.

(iii). Air is **bad** conductor of heat.

(iv). The normal temperature of human body is **37**ºC.

Question 2- Write True Or False.

(i) Metals are insulators of heat. **(False)**

(ii) Sea breeze arises due to conduction. **(False)**

(iii) We get heat from the sun by radiation. **(True)**

(iv) Wool is good conductor of heat. **(False)**

(v) Range of clinical thermometer is 35ºC to 42ºC. **(True)**

Question 3- Match The Following :

(i) Land breeze blows during	(a) winter
(ii) Sea breeze blows during	(b) night
(iii) We prefer light coloured clothes in	(c) day time
(iv) We prefer dark coloured clothes in	(d) summer

Question 4. Choose The Correct Answer.

(i). Temperature of human body is:

a) 100ºC b) 0ºC c) 37ºC **(✓)** d) 98ºC

(ii). Which is bad conductor of heat:

a) Aluminium b) Iron c) Copper d) Wood **(✓)**

(iii). One litre of water at 30ºC is mixed with one litre of water at 50ºC. Then temperature of mixture will be:

a) 80ºC b) More than 50ºC but less than 80ºC

c) 20ºC d) Between 30ºC and 50ºC **(✓)**

(iv). A wooden spoon is dipped in a cup of ice-cream. Its other end:

a) becomes cold by the process of conduction b) becomes cold by the process of convection

c) becomes cold by the process of radiation d) Does not become cold **(✓)**

(v). Land breeze is:

a) Cool air from land to sea **(✓)** b) Cool air from sea to land

c) Hot air from land to sea d) Hot air from sea to land

Question 5- Short Answer Type Questions.

(i) State the condition which determines the direction of flow of heat.

Answer- Heat always flows from hot body (high temperature) to cold body (low temperature).

(ii) What is clinical thermometer? Write its range.

Answer- Clinical thermometer is used to measure temperature of human body. Its range is from 35ºC to 42ºC.

(iii) What is the use of kink in a clinical thermometer?

Answer- Kink prevents the level of mercury to fall down even after it is taken out of mouth.

(iv) What is lab thermometer? Write its range.

Answer- Laboratory thermometer is used to measure temperature of objects other than living bodies. Its range is usually from -10ºC to 110ºC.

(v) Why do we prefer dark clothes in winter and light one in summers?

Answer- Dark coloured clothes are better absorbers of heat than the light coloured clothes. So we prefer dark clothes in winter and light one in summers.

(vi) Why do we wear woolen clothes in winter?

Answer- Wool has air trapped inside; air is bad conductor of heat. So woolen clothes keep us warm in winters.

Question 6- Long Answer Type Questions.

(i) What are various modes of heat transfer? Explain.

Answer- (1) Conduction- The process by which heat is transferred from hotter end to the colder end of a sold body without actual movement of particles is known as conduction.

(2) Convection- The process of heat transfer due to actual movement of heated particles is called convection. Liquids and gases get heated by convection.

(3) Radiation- The process of heat transfer which does not require any medium is known as radiation. Heat of the sun reaches earth by radiation.

(ii) Explain the formation of sea breeze and land breeze in coastal areas.

Answer- During day time land gets heated due to sunlight. The air over the land gets heated, expands and rises upwards. The cooler air from the sea rushes towards the coast to take its place due to convection. This moving air is known as sea breeze.

During the night time, exactly the reverse happens. Due to its higher absorption capacity, the water cools down more slowly than the land, so cool air from the land move towards the sea, this moving air is known as land breeze.

CHAPTER 6 – PHYSICAL AND CHEMICAL CHANGES

ACTIVITY- 6.1 : Cutting of paper is a physical change. (Page No.- 58, 59)

Question 1- Mention whether the cutting is reversible or irreversible change.

Answer- Irreversible change.

Question 2- Is the cutting of paper a physical or a chemical change?

Answer- Physical change.

ACTIVITY- 6.2 : Crushing of chalk is physical change. (Page No.- 59)

Question 1- Can you recover chalk from dust?

Answer- Yes.

Question 2- Does chalk powder dissolve in water?

Answer- No.

Question 3- What is the nature of above change? Is it physical or chemical?

Answer- Physical change.

ACTIVITY- 6.3: Change in a state of water is a physical change. (Page No.- 60)

Question 1- Ice melts into water with …… in temperature.

Answer- Increase.

Question 2- Water changes to ice with …… in temperature.

Answer- Decrease.

ACTIVITY- 6.4: Change in a state of water is a physical change. (Page No.- 60, 61)

Question 1- What is evaporation?

Answer- Process of converting liquid into its vapour form is known as evaporation.

Question 2- Define condensation.

Answer- Process of converting vapours into its liquid form is known as condensation.

Question 3- Water changes into gaseous form with ……. in temperature.

Answer- Increase.

Question 4- Water changes from gaseous state to liquid state with …… in temperature.

Answer- Decrease.

ACTIVITY- 6.5: Colour change is a physical change. (Page No.- 61)

Question 1- Which colour do you notice on heating the free end of hacksaw blade?

Answer- It turns orange/red.

Question 2- Is this physical change reversible or irreversible?

Answer- Reversible.

Question 1- Define a physical change. **(Page No.- 62)**

Answer- The change in physical properties like state, length, position, colour, shape etc. is known as a physical change.

Question 2- Is a new substance formed during a physical change?

Answer- No.

Question 3- Explain any two examples of physical change from your surroundings.

Answer- Converting water into ice and melting of candle's wax are physical changes.

ACTIVITY- 6.6 : Burning of magnesium ribbon is a chemical change.

(Page No.- 62-64)

Question 1- What type of metal oxide is formed on burning of magnesium ribbon?

Answer- Basic.

Question 2- What is the colour of magnesium oxide formed on heating magnesium?

Answer- White.

ACTIVITY- 6.7: Reaction of copper sulphate with iron is a chemical change.

(Page No.- 64, 65)

Question 1- What is the common name of copper sulphate?

Answer- Blue vitriol.

Question 2- Write the colour and chemical formula of ferrous sulphate.

Answer- Light green ; $FeSO_4$.

ACTIVITY- 6.8: Evolution of gas is a chemical change. **(Page No.- 65, 66)**

Question 1- What is the formula of lime water?

Answer- $Ca(OH)_2$.

Question 2- How the presence of CO_2 gas can be detected?

Answer- Carbon dioxide (CO_2) gas turns lime water milky.

Question 1- What is a chemical change? **(Page No.- 67)**

Answer- A change in which one or more new substances are formed is called a chemical change.

Question 2- Write two observations to see chemical change.

Answer- (1) Evolution of heat or light, (2) Evolution of a gas.

Question 3- What is lime water?

Answer- Aqueous solution of calcium hydroxide-$Ca(OH)_2$.

Question 4- What happens when carbon dioxide is passed through lime water?

Answer- Carbon dioxide (CO_2) gas turns lime water milky due to the formation of calcium carbonate.

Question 5- Name the gas evolved when acetic acid (vinegar) reacts with baking soda.

Answer- Carbon dioxide (CO_2) gas.

Question 6- What is the colour and formula of copper sulphate?

Answer- Colour- Blue ; Formula- $CuSO_4$.

Question 7- Name some compounds formed as a result of chemical reactions.

Answer- Calcium hydroxide, Calcium carbonate, Carbon dioxide etc.

Question 8- In chapter 5, you neutralized an acid with a base. Is neutralization a chemical change?

Answer- Yes.

ACTIVITY- 6.9: Preparation of crystals of copper sulphate. (Page No.- 69)

Question 1- What is end product in the process of crystallization?

Answer- Pure crystals of the given salt.

Question 2- When will you stop dissolving copper sulphate powder to hot water?

Answer- Till no more powder can be dissolved i.e. to get saturated solution.

EXERCISE

Question 1- Fill In The Blanks.

(i) A change in which only physical properties of a substance are changed is a **physical** change.

(ii) Changes that lead to formation of new substances are called **chemical** changes.

(iii) Fossil fuels produce **carbon dioxide** gas on burning.

(iv) When carbon dioxide is passed through lime water, it turns **milky**.

(v) **Galvanization** is the method for the prevention of rusting of iron objects.

Question 2- Match The Column 'A' With Column 'B'.

Column A	Column B
(i) Physical change	(a). Galvanization
(ii) Chemical change	(b). Formation of a new substance
(iii) Prevention from rusting	(c). Mixing of vinegar and baking soda
(iv) Evolution of carbon dioxide	(d). Reversible change

Question 3. Choose The Correct Answer.

(i). The example of chemical change is:

a) Eruption of volcano

b) burning of candle

c) cooking of food d) all of the above (✓)

(ii). When acetic acid is mixed with baking soda, the gas evolved is:

a) hydrogen b) oxygen c) carbon dioxide (✓) d) carbon mono oxide

(iii). For rusting of iron objects, the essential requirement is:

a) air (oxygen) b) moisture (water) c) open surface of object d) All of the above (✓)

(iv). For prevention of rust, we use:

a) A coat of oil and grease b) A coat of paint c) galvanization d) all of the above (✓)

(v). The chemical formula of rust is:

a) Fe_2O_3 b) $FeCO_3$ c) $Fe_2O_3.xH_2O$ (✓) d) $FeCO_3.xH_2O$

Question 4- Write True Or False.

(i) Cutting a log of wood into pieces is a chemical change. **(False)**

(ii) Formation of manure from leaves is a physical change. **(False)**

(iii) Iron pipes coated with zinc do not get rusted easily. **(True)**

(iv) Iron and rust are the same substances. **(False)**

(v) Condensation of steam is not a chemical change. **(True)**

Question 5- Very Short Answer Type Questions.

(i) What is rust? Write its chemical formula.

Answer- On reacting with air and moisture, a brown-red coloured layer is formed on iron objects, this layer is known as rust. Chemical formula of rust is $Fe_2O_3.xH_2O$.

(ii) Write the conditions necessary for rusting of iron.

Answer- Presence of: (1) Air (oxygen), (2) moisture (water), (3) open surface of an iron object.

(iii) Why are iron objects painted frequently?

Answer- For rusting of iron, contact of air and water is necessary. So iron objects are painted to prevent the contact of iron with air and moisture.

(iv) What is galvanization?

Answer- The process of depositing a layer of non-reactive metal (like zinc) over the surface of iron is known as galvanization.

(v) Name two metals which are deposited on the surface of iron objects during the process of galvanization.

Answer- Zinc or aluminium.

(vi) Burning of candle is an example of which type of change-physical or chemical change? Give reasons.

Answer- Burning of candle is a chemical process as it produces gases (new substance). Besides this melting of wax of candle is a physical change.

(vii) Why burning of fireworks s harmful?

Answer- Because burning of fireworks may cause blast, which produce many harmful gases.

(viii) What is crystallization?

Answer- Method of getting pure solid from an impure sample of solid by making crystals is known as crystallization.

Question 6- Short Answer Type Questions.

(i) Mixing of baking soda or vinegar is a chemical change or a physical change? Discuss.

Answer- Chemical change, because a new substance carbon dioxide gas is produced.

(ii) Explain how cutting and burning of wood are different type of change?

Answer- Cutting of wood is a physical change, because here only shape and size of wood are changed. But burning of wood is a chemical change, because here a new substance carbon dioxide gas is produced.

(iii) What will happen when carbon dioxide is passed through lime water?

Answer- Carbon dioxide (CO_2) gas turns lime water milky due to the formation of calcium carbonate.

(iv) Why does the colour of copper sulphate ($CuSO_4$) solution change, when an iron nail is dipped into it? Write chemical equation also.

Answer- When iron nails are dipped in copper sulphate solution, solution turns green from blue, because more reactive iron displaces copper forming green coloured iron sulphate. Chemical equation is as follows:

$$\mathbf{Fe + CuSO_4(aq) \longrightarrow FeSO_4(aq) + Cu}$$

Iron nails + Copper sulphate solution (blue) ⟶ Iron sulphate + copper. (light green)

(v) Magnesium ribbon is burnt and the ash formed is mixed with water. Now answer the following:

(a) Write equation for the burning of magnesium.

Answer- $2Mg + O_2 \longrightarrow 2MgO$

(b) What will happen when the mixture of ash and water is added to (1) blue litmus solution and (2) red litmus solution?

Answer- (1) Blue litmus solution will remain blue.

(2) Red litmus solution will turn blue.

(c) Name the substance formed by mixing ash and water. Is it acidic or basic?

Answer- Magnesium oxide solution is basic.

Question 7- Long Answer Type Questions.

(i) What are physical and chemical changes? Write differences between physical and chemical changes.

Answer-

Physical changes	Chemical changes
1. The change in physical properties like state, length, position, colour, shape etc. is known as physical change.	1. A change in which one or more new substances are formed is called a chemical change.
2. Not any new substance is formed.	2. New substance is formed.
3. For example: Melting of ice.	5. For example: Burning of paper.

(ii) What do you understand by rusting of iron? Write the necessary conditions required for rusting of iron objects. How rusting of iron and iron objects can be prevented?

Answer- Rusting of iron- On reacting with air and moisture, a brown-red coloured layer is formed on iron objects; this process is known as rusting.

Necessary conditions for rusting- Presence of: (1) Air (oxygen), (2) moisture (water), (3) open surface of an iron object.

Prevention of rusting- (1) By greasing or oiling, (2) By painting, (3) By galvanization.

(iii) Give detail of process of crystallization of copper sulphate ($CuSO_4$).

Answer- Take 200ml of water in a beaker and add a few drops of dilute sulphuric acid into it. Heat the water. When it starts boiling, copper sulphate powder is added slowly while stirring continuously to make a saturated solution. The solution is filtered and allowed to cool down. Crystals of copper sulphate slowly form at the bottom of the beaker.

CHAPTER 15- LIGHT

ACTIVITY-15.2: Reflection through a mirror. (Page No.- 185, 186)

Question 1- The process of change in direction of light after falling on a mirror is called …… of light.

Answer- Reflection.

Question 2- Angle of incidence is equal to angle of reflection. (True/False)

Answer- True.

ACTIVITY- 15.3: The distance of the object in front of the mirror is same as the distance of the image behind the mirror. (Page No.- 188, 189)

Question 1- The distance between the object and the mirror is ……. to the distance between the image and the mirror.

Answer- Equal.

Question 2- The plane mirror has to be placed vertically on the graph paper. (True/False)

Answer- True.

Question 3- The plane mirror should be vertically upright. (True/False)

Answer- True.

ACTIVITY-15.4: To obtain the image of the sun on a wall using a concave mirror. (Page No.- 190, 191)

Question 1- The image of the sun formed by the concave mirror on the wall is …….. image.

Answer- Real.

Question 2- Is the image of a candle seen using a concave mirror same as that of the Sun seen on the wall?

Answer- Yes (both are real).

ACTIVITY- 15.5: To obtain the image of an object on a screen using a concave mirror. (Page No.- 191, 192)

Question 1- When the object is very far from the concave mirror, the image formed is ……. and ……

Answer- Small and inverted.

Question 2- The image formed on the screen is real. (True/False)

Answer- True.

Question 3- For a concave mirror, the image formed is always real. (True/False)

Answer- False.

ACTIVITY- 15.6: To obtain the image of the sun on a paper using a convex lens.

(Page No.- 194, 195)

Question 1- The bright spot of light obtained on the paper is the image formed of the ……..

Answer- Sun.

Question 2- Image obtained on the paper is the virtual image. (True/False)

Answer- False.

ACTIVITY- 15.7: To obtain the image of an object on a screen using a convex lens.

(Page No.- 195, 196)

Question 1- The convex lens is placed between the object and the screen. (True/False)

Answer- True.

Question 2- For a convex lens, image formed is always real. (True/False)

Answer- False.

ACTIVITY-15.8: To study the formation of white light by mixing seven colours.

(Page No.- 197, 198)

Question 1- White light is composed of ……. colours.

Answer- Seven (7).

Question 2- When disc with seven colours is rotated, it appears to be red.. (True/False)

Answer- False.

Question 3- Name the seven colours of which the white light is made off.

Answer- VIBGYOR- Violet, Indigo, Blue, Green, Yellow, Orange and Red.

EXERCISE

Question 1- Fill In The Blanks.

(i). An image formed by a **plane** mirror is always of the same size as that of object.

(ii). In a plane mirror, the left hand of a person appears to be the **right** hand in the image and **right** hand appears to be the left hand in the image.

(iii). The image formed by a convex mirror is always **virtual** and **smaller** in size.

(iv). Convex lenses are **thicker** in the middle and concave lenses are **thinner** in the middle than at the edges.

(v). A prism splits the white light into **seven (7)** colours.

Question 2- Write True Or False.

(i). There is reflection of light through a lens. **(False)**

(ii). The ray of light coming towards the plane mirror is called the reflected ray. **(False)**

(iii).The image formed by a plane mirror is always in front of the mirror. **(False)**

(iv). A concave mirror is a part of hollow sphere of glass, whose outer side is coated with silver layer and reflection takes place from the inside. **(True)**

(v). Concave lens always forms a virtual, erect and smaller image of the object. **(True)**

Question 3. Multiple Choice Questions:

(i). Which of the following does not show reflection of light?

a) Plane mirror b) Concave mirror c) Convex mirror d) Card board **(✓)**

(ii). Which is used for rear view in cars and other vehicles?

a) Concave mirror b) Convex mirror **(✓)** c) Convex lens d) Concave lens

(iii). The image of an object formed by a concave lens is always:

a) Real and diminished b) Virtual and larger c) Real and larger d) Virtual and diminished **(✓)**

(iv). The process of splitting of white light in seven colours on passing through a prism is called:

a) Reflection of light b) Refraction of light c) Bending of light d) Dispersion of light **(✓)**

Question 4- Match The Column 'A' With Column 'B'.

A	B
(i) Mirror used by dentists	(a). Spectacles
(ii) Rear view mirror	(b). Microscope
(iii) Magnifying glass	(c). Vehicles
(iv) Concave lens	(d). Concave

Question 5- Very Short Answer Type Questions.

(i) Is the image formed by a plane mirror real or virtual?

Answer- Virtual.

(ii) Which lens forms a real image of an object?

Answer- Convex lens.

(iii) Which optical instrument uses convex lens?

Answer- Microscope.

(iv) What is the seven rainbow coloured disc called?

Answer- Newton disc.

Question 6- Short Answer Type Questions.

(i) Differentiate between real and virtual images. Give examples.

Answer-

Real Image	Virtual Image
1. Real image can be obtained on a screen.	1. Virtual image cannot be obtained on a screen.
2. It is formed by actual meeting of rays of light.	2. In virtual images rays of light do not meet.
3. It is generally inverted.	3. It is generally erect.
4. Image formed by a projector is real.	4. Image formed by a plane mirror is virtual.

(ii) A person is standing 5m away from a plane mirror. How far will his image be:

(1) From the mirror, (2) From the person himself?

Answer- (1) From the mirror – 5m, (2) From the person himself – 10m.

(iii) Give two uses of concave mirror.

Answer- Concave mirrors are used in vehicle's headlights, by ENT doctor and in solar furnaces.

(iv) State two differences between convex lens and concave lens.

Answer-

Convex Lens	Concave Lens
1. Thick in the middle and thin at the edges.	1. Thin in the middle and thick at the edges.
2. Can form real image.	2. Always form virtual image.
3. Converging lens.	3. Diverging lens.

(v) Of how many colours is white light made off? Name them.

Answer- Seven (7). **VIBGYOR-** Violet, Indigo, Blue, Green, Yellow, Orange and Red.

(vi) Ravi is observing his image in a plane mirror. The distance between the mirror and his image is 6m. If he moves 2m towards the mirror, then the distance between Ravi and his image will be:

Answer- 8m.

Question 7- Long Answer Type Questions.

(i) State and explain the characteristics of the image formed by a plane mirror.

Answer- Characteristics of the image formed by a plane mirror-

(1) Plane mirror forms an erect and virtual, image.

(2) Plane mirror forms laterally inverted image.

(3) Plane mirror forms image behind the mirror.

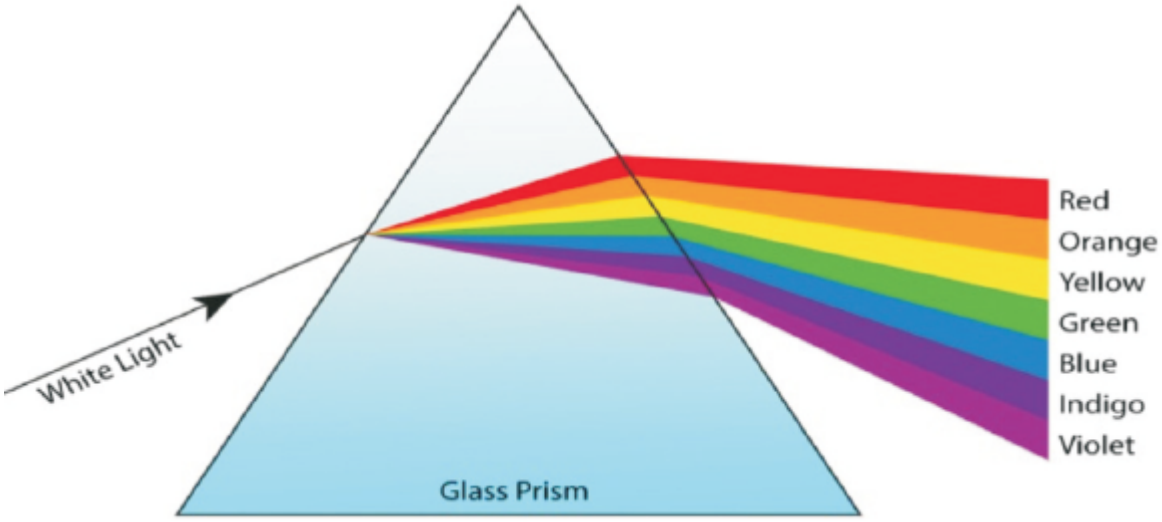
(4) Plane mirror forms the same size image as that of object.

(5) Plane mirror forms image at the same distance from the mirror as the object is in front of it.

(ii) What is meant by dispersion of light? Explain by using a prism. Which natural phenomenon is associated with dispersion of light?

Answer- Dispersion of light- The process of splitting of white light in seven colours on passing through a prism is called dispersion of light.

When we pass white light through a prism, we see that it splits into seven colours i.e. **VIBGYOR-** Violet, Indigo, Blue, Green, Yellow, Orange and Red. Rainbow formed in the sky after raining is due to dispersion of light.



CHAPTER 16 – WATER: A PRECIOUS RESOURCE

ACTIVITY- 16.1

(Page No.- 202)

Question 1- Name three activities by which water is being wasted?

Answer- Cleaning of houses and animals, washing car and opening tap during brushing our teeth.

Question 2- Should we check the wastage of water and why?

Answer- Yes, because there are very limited sources of fresh water on earth.

Question 1- _____ is the process by which water is converted from its liquid state to a gaseous state.

Answer- Evaporation. (Page No.- 203)

Question 2- _____ is the process by which water is converted from its gaseous state to a liquid state.

Answer- Condensation.

ACTIVITY- 16.2

(Page No.- 204)

Question 1- Which beaker represents the underground water?

Answer- Beaker 'C'.

Question 2- Which beaker represents the surface water?

Answer- Water remained in beaker 'A'.

EXERCISE

Question 1- Fill In The Blanks :

(i). The water we drink is in **liquid** state.

(ii). The process of seeping of water into the soil is called **infiltration**.

(iii). The upper level of ground water is called **water-table**.

(iv). **Water management** means dealing with water in the best possible ways.

(v). A farmer can use water economically in the field, by **drip irrigation**.

Question 2- Write True Or False.

(i). Water cycle helps in maintaining water on the earth. **(True)**

(ii). About 97% of total water present on the earth is fresh water. **(False)**

(iii). Repair leaking taps and pipes at the earliest. **(True)**

(iv). We are quickly moving towards global water crisis. **(True)**

(v). Turn on taps while brushing. **(False)**

Question 3- Match The Column:-

Column I	Column II
(i) Ice	(a). Oceans and sea
(ii) Saline water	(b). Rivers and ponds
(iii) Fresh water	(c). Gaseous state of water
(iv) Water vapour	(d). Purest form of water
(v) Rain water	(e). Solid state of water

Question 4. Choose One Option For The Follwing.

(i). Which of the following is responsible for depletion of ground water?

a) Increasing population b) Increasing industries

c) Deforestation d) All of these **(✓)**

(ii). The Punjab preservation of subsoil water act was passed in the year:

a) 2009 **(✓)** b) 2010 c) 200l d) 2015

(iii). The world water day is celebrated every year on:

a) 22 April b) 24 March c) 22 March **(✓)** d) 22 May

(iv). Oceans and sea cover about ……. of the earth surface.

a) 75% b) 71% c) 97% **(✓)** d) 29%

(v). We should not keep taps running while:

a) Brushing b) Shaving c) Bathing d) All of these **(✓)**

Question 5- Very Short Answer Type Questions.

(i) What do you mean by ground water?

Answer- Groundwater is the water present below the earth's surface in the cracks and spaces in soil, sand and rocks.

(ii) Why is sea and ocean water not fit for drinking?

Answer- Because sea and ocean water have large amounts of dissolved salts.

(iii) Define aquifers.

Answer- Groundwater present between the layers of hard rocks below the water table is known as aquifer.

(iv) Name the three states of water.

Answer- Solid, liquid and gas.

(v) How is groundwater recharged?

Answer- Rainwater and water from other sources such as rivers and ponds seeps into the soil due to gravity until the empty spaces and cracks deep below the ground are filled with water. This process is known as infiltration. Hence groundwater gets recharged.

Question 6- Short Answer Type Questions.

(i) Enlist some activities by which water is being wasted by people.

Answer- Water is being wasted by people in cleaning of houses and animals, washing car and opening taps during brushing teeth.

(ii) How will you minimize the use of water to maintain a garden?

Answer- We should water the garden early in the morning and late afternoon taking shorter showers. We should reuse the waste water of cleaning purposes in watering the plants.

(iii) How is water important to us?

Answer- (1). About 70% of human body consists of water.

(2). Water helps to control our body temperature.

(3). Water helps to excrete waste products from our body.

(4). Water is important for growth of plants.

(5). Water maintains the temperature of earth.

(6). Water is essential for our many daily life activities.

(iv) How increase in human population is leading to depletion of water table?

Answer- As the human population increase, consumption of water by them increases for their daily activities. Often groundwater is used for construction of houses, shops and roads etc. Hence groundwater is used at high rate, but the area for seepage of water decreases. So water table is depleted by growth in human population.

(v) Why do plants wilt and finally dry up if they do not get water for some days?

Answer- Plants use water in photosynthesis. Also plants lose some water by transpiration. So if plants do not get water for some days, they wilt and finally dry up.

Question 7- Long Answer Type Questions.

(i) What steps will you take to save water?

Answer- (1) Make efforts to stop the leakage of water from taps and water pipes.

(2) Turn off taps while brushing or shaving.

(3) Mop the floor instead of washing, reuse the waste water to water the plants.

(4) Water the garden early in the morning and late afternoon taking shorter showers.

(5) Wash vegetables and fruits in big containers and use this water for cleaning or watering the plants.

CHAPTER 18 – WASTE WATER STORY

ACTIVITY- 18.1

(Page No.- 224)

Question 1- What is the difference in colour of contaminated and clean water?

Answer- Clean water is clear and transparent but contaminated water is grey or black in colour.

Question 2- Name any two organic contaminants present in drain water.

Answer- Human and animal waste, fruit and vegetable waste, oils, pesticides etc.

ACTIVITY- 18.2

(Page No.- 225)

Question 1- Why are manholes built in sewage route?

Answer- To check any problem in sewage route.

Question 2- Name any two organisms living in and around an open drain.

Answer- Flies and mosquitoes.

ACTIVITY- 18.3

(Page No.- 228)

Question 1- What change do you notice in the appearance of liquid after aeration?

Answer- Liquid becomes dirty after aeration.

Question 2- What was removed by the sand filter?

Answer- Solid impurities.

EXERCISE

Question 1- Fill In The Blanks :

(i). **Contaminants** are dissolved and suspended sold impurities present in sewage.

(ii). The activated sludge is about **97%** water.

(iii). **Sludge** is the solid material settled at the bottom of water clarifier.

(iv). **Waste water treatment plant** is the place where contaminants are removed from wastewater.

(v). Adopt **good** sanitation practices.

Question 2- Write True Or False.

(i). The sight and smell of open drain is attractive. **(False)**

(ii). Throw plastic bags in the drain. **(False)**

(iii). Open drain is the breeding place for flies and mosquitoes. **(True)**

(iv). Do not defecate in the open. **(True)**

(v). Solid food remains can block the drain. **(True)**

Question 3- Match The Column:-

Column I	Column II
(i) Organic impurities	(a). Sewage treatment
(ii) Inorganic impurities	(b). Typhoid
(iii) Wastewater treatment	(c). Manure
(iv) Water borne disease	(d). Nitrates and phosphates
(v) Dried sludge	(e). Human wastes

Question 4. Choose The Correct Answer.

(i). Wastewater treatment plant involves:

a) Bar screen b) Water clarifier c) Grit and sand removal tank d) All of these **(✓)**

(ii). Name the by-product of wastewater treatment plant:

a) Biogas b) Sludge c) Both a and b **(✓)** d) None of these

(iii). Which of the following chemical is used to disinfect water:

a) Chlorine b) Ozone c) Both a and b **(✓)** d) None of these

(iv). World toilet day is celebrated every year on:

a) 29 November b) 19 October c) 19 November **(✓)** d) 29 October

(v). Which of the following is not a low cost onsite sewage disposal system:

a) Septic tank b) Compost pit c) Chemical toilets d) Bar screen **(✓)**

Question 5- Very Short Answer Type Questions.

(i) What is sewage?

Answer- Sewage is wastewater that contains dissolved and suspended sold impurities.

(ii) Why is sludge?

Answer- Sludge is the solid material that settles at the bottom of water clarifier.

(iii) What is clarified water?

Answer- Water free from impurities (contaminants) is known as clarified water.

(iv) What is septic tank?

Answer- A septic tank is small sewage treatment system having anaerobic bacterial environment to decompose the waste matter.

(v) What is wastewater treatment plant?

Answer- Wastewater treatment plant is a system used to remove impurities from sewage and proper treatment of impurities and clarified water.

Question 6- Short Answer Type Questions.

(i) Why oil and fats should not be thrown in the drain? Comment.

Answer- Oils and fats should not be released in drain, because they can harden and block the pipes. In an open drain, the fats clog the soil pores, reducing its effectiveness in filtering water.

(ii) What is the function of bar screens in wastewater treatment plants?

Answer- Bar screen removes large objects like rags, sticks, cans, plastic packets and napkins.

(iii) "Throw litter in the dustbin only" Comment.

Answer- We should through litter (rubbish) in the dustbin. With this our surrounding will remain clean and we can easily decompose the rubbish.

(iv) What are the alternative arrangements for sewage disposal?

Answer- We can use septic tanks, chemical tanks and compost pits as alternative arrangements for sewage disposal.

(v) Why is it harmful to discharge untreated sewage in water bodies?

Answer- Because untreated sewage consists of various disease-causing microorganisms and pollutants that can contaminate the soil and water resources, which may cause many diseases.

Question 7- Long Answer Type Questions.

(i) Write a brief note on open defecation.

Answer- A large numbers of people in our country defecate in open due to lack of sewerage facilities. Open defecation is a health hazard. It results in the spread of a number of diseases like cholera, typhoid, hepatitis-A, polio and diarrhea etc. Every year about 100,000 children die in India from diseases caused by fecal contamination. So this practice should be stopped by providing proper facilities to every citizen.

(ii) What steps will you take at home for efficient working of sewerage system?

Answer- (1) Do not throw oil and fats into the drain.

(2) Do not throw chemicals like paints, medicines, grease, insecticides etc. into the drain.

(3) Do not throw wastes like solid food remains, tea leaves, cotton, plastic bags etc. into the drain.

(4) Do not waste water.

(5) Use only phosphate free soaps and detergents.

(6) Avoid using the toilet as a wastebasket.